FCC PART 15.247

TEST REPORT

For

NotAnotherOne Inc.

100 Pine Street Suite 1250, San Francisco, California, United States

FCC ID: 2AHGD-ATMO-T02

Report Type:	**Product Name:**
Original Report	The Portable Air Pollution Monitor

Test Engineer:	*Lorin Bian*
Report Number:	RDG161226001B
Report Date:	2017-01-24
Reviewed By:	Henry Ding EMC Leader
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Chengdu) 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, China Tel: 028-65523123, Fax: 028-65525125 www.baclcorp.com

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The ***NotAnotherOne Inc.***'s product, model number: ***Atmotube (FCC ID: 2AHGD-ATMO-T02)*** or (the "EUT") in this report was a ***The Portable Air Pollution Monitor***, which was measured approximately: 1.94 cm (L) x 1.94 cm (W) x 6.35 cm (H), rated input voltage: DC3.7V from battery or DC 5V charged from USB.

**All measurement and test data in this report was gathered from final production sample, serial number: 161226001 (assigned by the BACL, Chengdu). It may have deviation from any other sample. The EUT supplied by the applicant was received on 2016-12-27, and EUT conformed to test requirement.*

Objective

This report is prepared on behalf of ***NotAnotherOne Inc.*** in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communications Commission's rules.

The tests were performed in order to determine the compliance of the EUT with FCC Part 15-Subpart C, section 15.203, 15.205, 15.209 and 15.247 rules.

Related Submittal(s)/Grant(s)

No related submittal(s)/grant(s).

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Chengdu). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

The uncertainty of any RF tests which use conducted method measurement is ±3.17 dB, the uncertainty of any radiation on emissions measurement is:

30M~200MHz: ±4.7 dB;
200M~1GHz: ±6.0 dB;
1G~6GHz: ±5.13dB;
6G~25GHz: ±5.47dB;

And the uncertainty will not be taken into consideration for all test data recorded in the report.

Test Facility

The test site used by BACL to collect test data is located in the 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, China.

Test site at BACL has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on April 24, 2015. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 560332. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in testing mode, which was provided by manufacturer.
For Bluetooth LE mode, 40 channels are provided for testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2442
1	2404	…	…
…	…	…	…
…	…	…	…
..	…	38	2478
19	2440	39	2480

EUT was tested with channel 0, 19 and 39.

Equipment Modifications

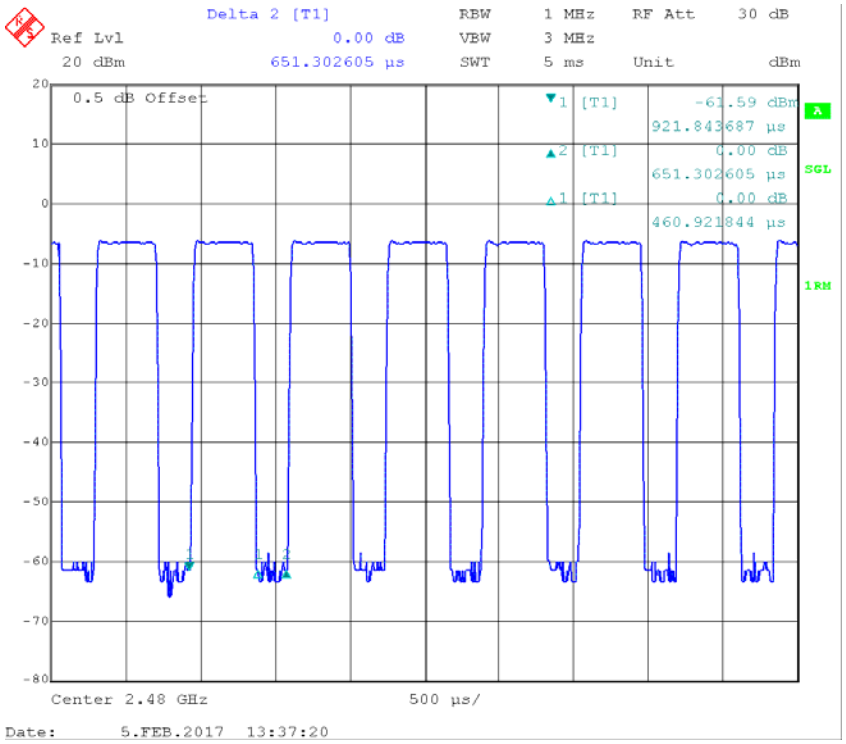
No modification was made to the EUT tested.

EUT Exercise Software

The test mode was configured by manufacture setting with duty cycle as below:

Test mode	T_{on} (ms)	T_{on+off} (ms)	Duty Cycle (%)
BLE	0.461	0.651	71%

The minimum transmission duration(T) is 0.461ms for BLE mode.



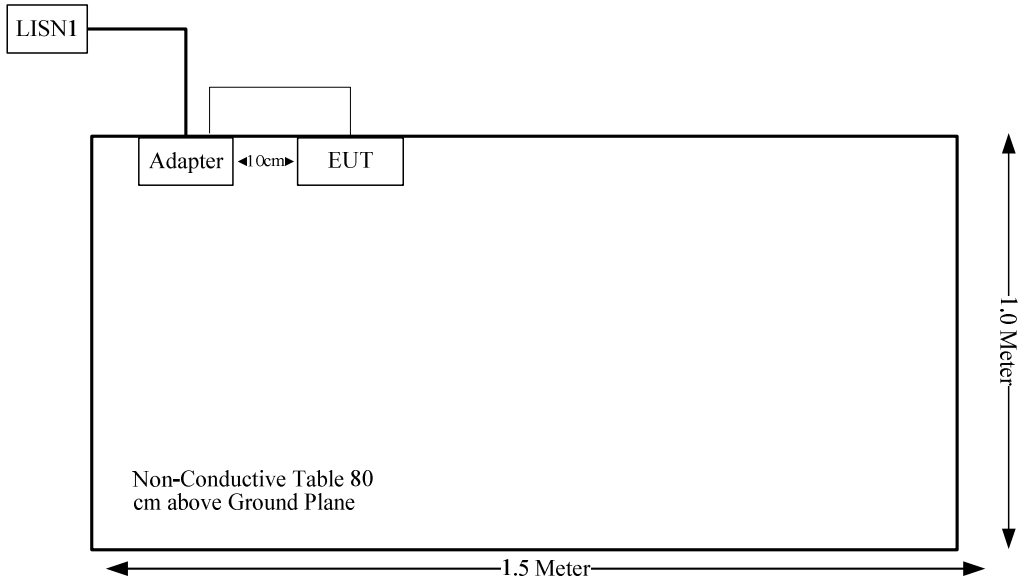
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
MAXWEST	AC Adapter	KA1517	0502000USU

External Cable

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
USB Cable	NO	NO	0.8	Adapter	EUT

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.247 (i) & §1.1310 & §2.1093	RF Exposure	Compliant
§15.203	Antenna Requirement	Compliant
§15.207 (a)	AC Line Conducted Emissions	Compliant
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliant
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliant
§15.247(b)(3)	Maximum conducted output power	Compliant
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliant
§15.247(e)	Power Spectral Density	Compliant

FCC §15.247 (i) & §1.1310 & §2.1093- RF EXPOSURE

Applicable Standard

According to§15.247(i) and §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB447498 D01 General RF Exposure Guidance v06

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

Measurement Result

The max conducted power including tune-up tolerance is -2.0 dBm (0.63 mW).
[(max. power of channel, mW)/(min. test separation distance, mm)][√f(GHz)]
= 0.63/5*(√2.480) = 0.2<3.0

So the SAR evaluation is not necessary.

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

Antenna Connector Construction

The EUT has one internal antenna arrangement for BT, and the antenna gain is 0dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207

Measurement Uncertainty

Compliance or non- compliance with a disturbance limit shall be determined in the following manner:

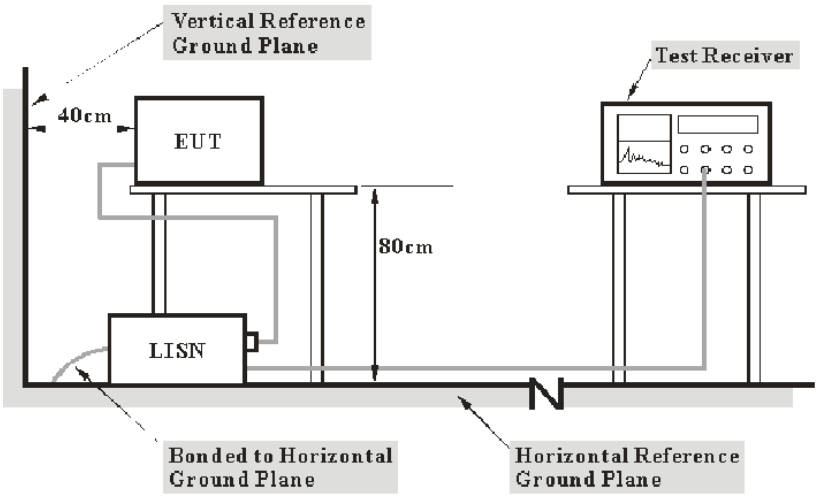
If U_{lab} is less than or equal to U_{cispr} of Table 1, then:
–compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
If U_{lab} is greater than U_{cispr} of Table 1, then:
–compliance is deemed to occur if no measured disturbance level, increased by (U_{lab} − U_{cispr}), exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level, increased by (U_{lab} − U_{cispr}), exceeds the disturbance limit.

Based on CISPR 16-4-2:2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Chengdu) is ±3.17 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cispr}

Measurement		U_{cispr}
Conducted disturbance at mains port using AMN	(150 kHz to 30 MHz)	3.4 dB

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT was according to ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The power cables and external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The adapter was connected to an AC120V/60Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$V_C = V_R + A_C + VDF$

Herein,s
V_C: corrected voltage amplitude
V_R: reading voltage amplitude
A_c: attenuation caused by cable loss
VDF: voltage division factor of AMN or ISN

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model Number	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS 30	836858/0016	2016-12-02	2017-12-01
Rohde & Schwarz	L.I.S.N.	ENV216	3560.6550.06	2016-12-02	2017-12-01
Rohde & Schwarz	PULSE LIMITER	ESH3Z2	357.8810.52	2016-10-31	2017-10-30
N/A	Conducted Cable	NO.5	N/A	2016-11-10	2017-11-09
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207.

Test Data

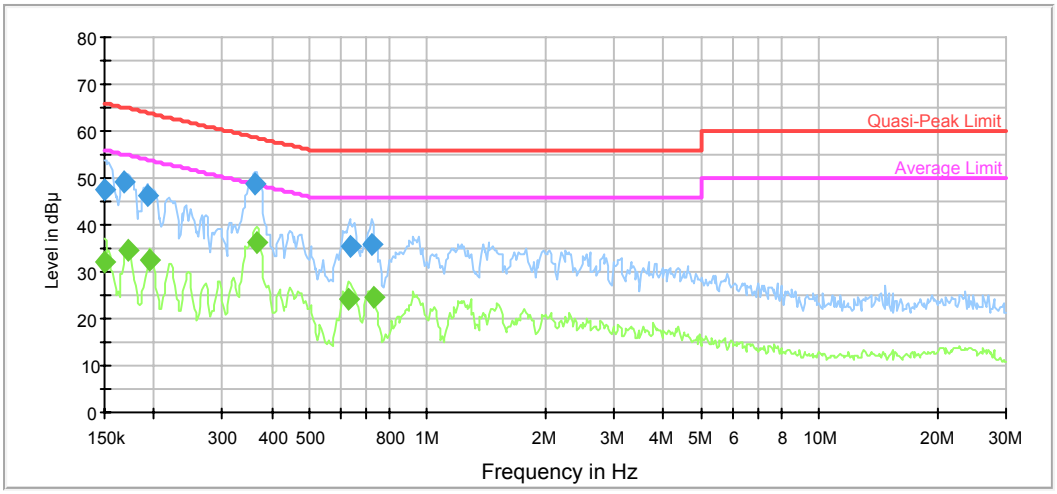
Environmental Conditions

Temperature:	23.1 °C
Relative Humidity:	45 %
ATM Pressure:	102 kPa

The testing was performed by Lorin Bian on 2017-01-20.

Test Mode: Transmitting

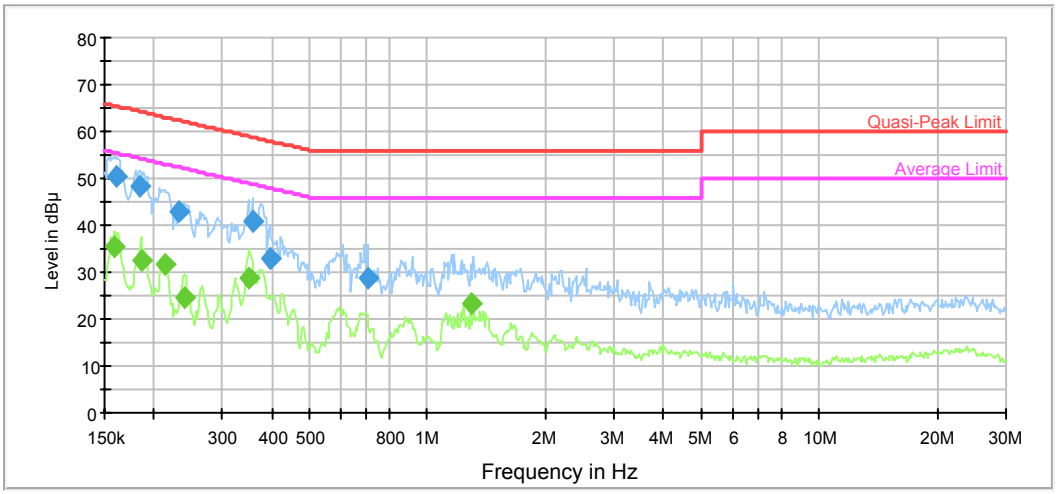
AC120V/60Hz, Line



Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.150000	47.3	9.000	L1	19.7	18.7	66.0	Compliance
0.169044	49.0	9.000	L1	19.7	16.0	65.0	Compliance
0.192030	46.3	9.000	L1	19.7	17.7	63.9	Compliance
0.363254	48.8	9.000	L1	19.7	9.9	58.7	Compliance
0.634524	35.6	9.000	L1	19.7	20.4	56.0	Compliance
0.720803	35.7	9.000	L1	19.7	20.3	56.0	Compliance

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.150000	32.1	9.000	L1	19.7	23.9	56.0	Compliance
0.171759	34.5	9.000	L1	19.7	20.4	54.9	Compliance
0.195114	32.6	9.000	L1	19.7	21.2	53.8	Compliance
0.366160	36.4	9.000	L1	19.7	12.2	48.6	Compliance
0.629488	24.2	9.000	L1	19.7	21.8	46.0	Compliance
0.726569	24.5	9.000	L1	19.7	21.5	46.0	Compliance

AC120V/60Hz, Neutral



Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.161152	50.5	9.000	N	19.7	14.9	65.4	Compliance
0.184529	48.4	9.000	N	19.6	15.9	64.3	Compliance
0.232499	43.0	9.000	N	19.6	19.4	62.4	Compliance
0.357511	41.0	9.000	N	19.6	17.8	58.8	Compliance
0.396530	32.8	9.000	N	19.6	25.1	57.9	Compliance
0.703777	28.7	9.000	N	19.6	27.3	56.0	Compliance

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.158604	35.4	9.000	N	19.7	20.1	55.5	Compliance
0.186006	32.6	9.000	N	19.6	21.6	54.2	Compliance
0.212988	31.7	9.000	N	19.6	21.4	53.1	Compliance
0.240029	24.8	9.000	N	19.6	27.3	52.1	Compliance
0.351859	28.5	9.000	N	19.6	20.4	48.9	Compliance
1.289541	23.1	9.000	N	19.6	22.9	46.0	Compliance

FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

Measurement Uncertainty

Compliance or non- compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cispr} of Table 2, then:
–compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
If U_{lab} is greater than U_{cispr} of Table 2, then:
–compliance is deemed to occur if no measured disturbance level, increased by ($U_{lab} - U_{cispr}$), exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level, increased by ($U_{lab} - U_{cispr}$), exceeds the disturbance limit.

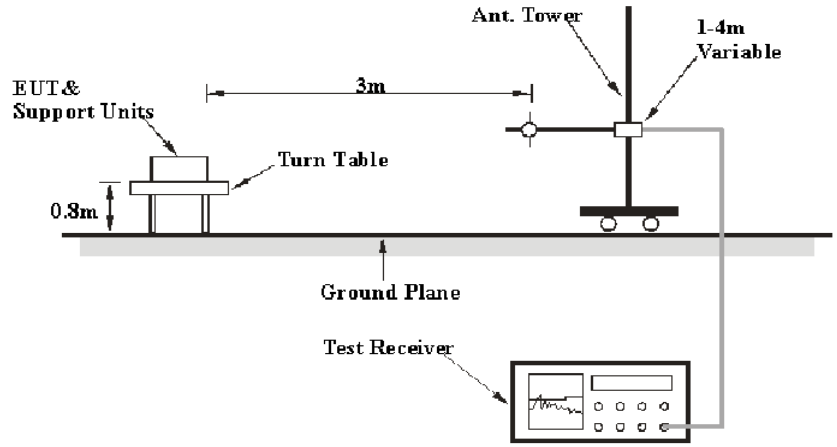
Based on CISPR 16-4-2-2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Chengdu) is:
30M~200MHz: ±4.7 dB;
200M~1GHz: ±6.0 dB;
1G~6GHz: ±5.13dB;
6G~25GHz: ±5.47 dB;

Table 2 – Values of U_{cispr}

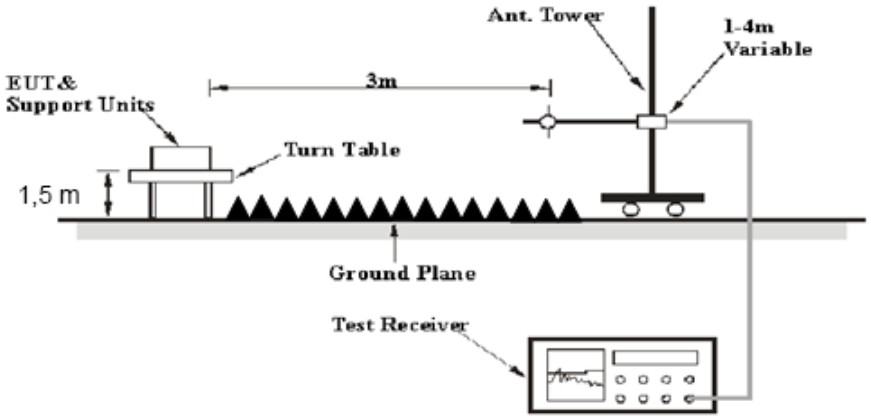
Measurement		U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC)	(30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR)	(1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR)	(6 GHz to 18 GHz)	5.5 dB

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.247 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

30MHz-1000MHz:

Detector	RBW	Video B/W	IF B/W
QP	120 kHz	300 kHz	120kHz

1GHz- 25GHz:

Detector	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
Ave.	>98%	1MHz	10 Hz
	<98%	1MHz	1/T

Note: T is minimum transmission duration

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1 GHz, peak and Average detection modes for frequencies above 1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Loss + Cable Loss - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit –Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Amplifier	8447D	2944A10442	2016-12-02	2017-12-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2016-12-02	2017-12-01
Sunol Sciences	Broadband Antenna	JB3	A101808	2016-04-10	2019-04-09
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2016-12-02	2017-12-01
ETS	Horn Antenna	3115	003-6076	2016-12-02	2017-12-01
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-0113024	2014-06-16	2017-06-15
Mini-circuits	Amplifier	ZVA-183-S+	771001215	2016-05-20	2017-05-19
HP	Amplifier	8449B	3008A00277	2016-12-02	2017-12-01
EMCT	Semi-Anechoic Chamber	966	N/A	2015-04-24	2018-04-23
N/A	RF Cable (below 1GHz)	NO.1	N/A	2016-11-10	2017-11-09
N/A	RF Cable (below 1GHz)	NO.4	N/A	2016-11-10	2017-11-09
N/A	RF Cable (above 1GHz)	NO.2	N/A	2016-11-10	2017-11-09

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Section 15.205, 15.209 and 15.247.

Test Data

Environmental Conditions

Temperature:	20.3 °C
Relative Humidity:	48 %
ATM Pressure:	101.2 kPa

** The testing was performed by Lorin Bian on 2017-01-16.*

Test Mode: Transmitting

30MHz-25GHz:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB)					
Low Channel: 2402 MHz									
2402	68.25	PK	H	23.53	3.00	0.00	94.78	N/A	N/A
2402	66.53	AV	H	23.53	3.00	0.00	93.06	N/A	N/A
2402	60.42	PK	V	23.53	3.00	0.00	86.95	N/A	N/A
2402	58.50	AV	V	23.53	3.00	0.00	85.03	N/A	N/A
2390	27.05	PK	H	23.57	3.00	0.00	53.62	74	20.38
2390	15.20	AV	H	23.57	3.00	0.00	41.77	54	12.23
4804	39.02	PK	H	30.77	5.12	26.87	48.04	74	25.96
4804	26.65	AV	H	30.77	5.12	26.87	35.67	54	18.33
7206	40.13	PK	H	34.71	6.16	26.35	54.65	74	19.35
7206	27.18	AV	H	34.71	6.16	26.35	41.7	54	12.3
9608	37.14	PK	H	37.06	7.82	26.18	55.84	74	18.16
9608	25.26	AV	H	37.06	7.82	26.18	43.96	54	10.04
3178	43.61	PK	H	25.20	3.70	26.47	46.04	74	27.96
3178	31.79	AV	H	25.20	3.70	26.47	34.22	54	19.78
432.55	43.95	QP	H	16.86	1.54	28.43	33.92	46.00	12.08
480.08	42.74	QP	H	18.20	1.65	28.69	33.90	46.00	12.10
Middle Channel: 2440 MHz									
2440	68.53	PK	H	23.40	3.00	0.00	94.93	N/A	N/A
2440	66.24	AV	H	23.40	3.00	0.00	92.64	N/A	N/A
2440	60.82	PK	V	23.40	3.00	0.00	87.22	N/A	N/A
2440	58.84	AV	V	23.40	3.00	0.00	85.24	N/A	N/A
4880	39.71	PK	H	31.02	5.09	26.87	48.95	74	25.05
4880	27.74	AV	H	31.02	5.09	26.87	36.98	54	17.02
7320	39.63	PK	H	34.94	6.22	26.40	54.39	74	19.61
7320	28.10	AV	H	34.94	6.22	26.40	42.86	54	11.14
9760	37.04	PK	H	37.16	7.71	26.27	55.64	74	18.36
9760	24.96	AV	H	37.16	7.71	26.27	43.56	54	10.44
2963	43.28	PK	H	24.13	3.40	26.45	44.36	74	29.64
2963	31.47	AV	H	24.13	3.40	26.45	32.55	54	21.45
3180	43.65	PK	H	25.21	3.70	26.47	46.09	74	27.91
3180	31.81	AV	H	25.21	3.70	26.47	34.25	54	19.75
432.55	44.22	QP	H	16.86	1.54	28.43	34.19	46.00	11.81
480.08	42.88	QP	H	18.20	1.65	28.69	34.04	46.00	11.96
High Channel: 2480 MHz									
2480	68.99	PK	H	23.27	2.99	0.00	95.25	N/A	N/A
2480	67.39	AV	H	23.27	2.99	0.00	93.65	N/A	N/A
2480	62.86	PK	V	23.27	2.99	0.00	89.12	N/A	N/A
2480	60.84	AV	V	23.27	2.99	0.00	87.1	N/A	N/A
2483.5	29.07	PK	H	23.26	2.99	0.00	55.32	74	18.68
2483.5	19.48	AV	H	23.26	2.99	0.00	45.73	54	8.27
4960	38.22	PK	H	31.27	5.05	26.88	47.66	74	26.34
4960	28.14	AV	H	31.27	5.05	26.88	37.58	54	16.42
7440	38.49	PK	H	35.18	6.27	26.45	53.49	74	20.51
7440	28.93	AV	H	35.18	6.27	26.45	43.93	54	10.07
9920	36.72	PK	H	37.25	7.60	26.37	55.2	74	18.8
9920	26.61	AV	H	37.25	7.60	26.37	45.09	54	8.91
3196	44.19	PK	H	25.30	3.72	26.48	46.73	74	27.27
3196	34.98	AV	H	25.30	3.72	26.48	37.52	54	16.48
432.55	45.06	QP	H	16.86	1.54	28.43	35.03	46.00	10.97
480.08	43.3	QP	H	18.20	1.65	28.69	34.46	46.00	11.54

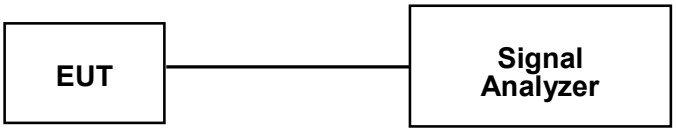
FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH

Applicable Standard

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Test Procedure

a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3×RBW
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2016-09-21	2017-09-20
N/A	RF Cable	N/A	N/A	Each Time	/

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	25.4 °C
Relative Humidity:	43 %
ATM Pressure:	96.8 kPa

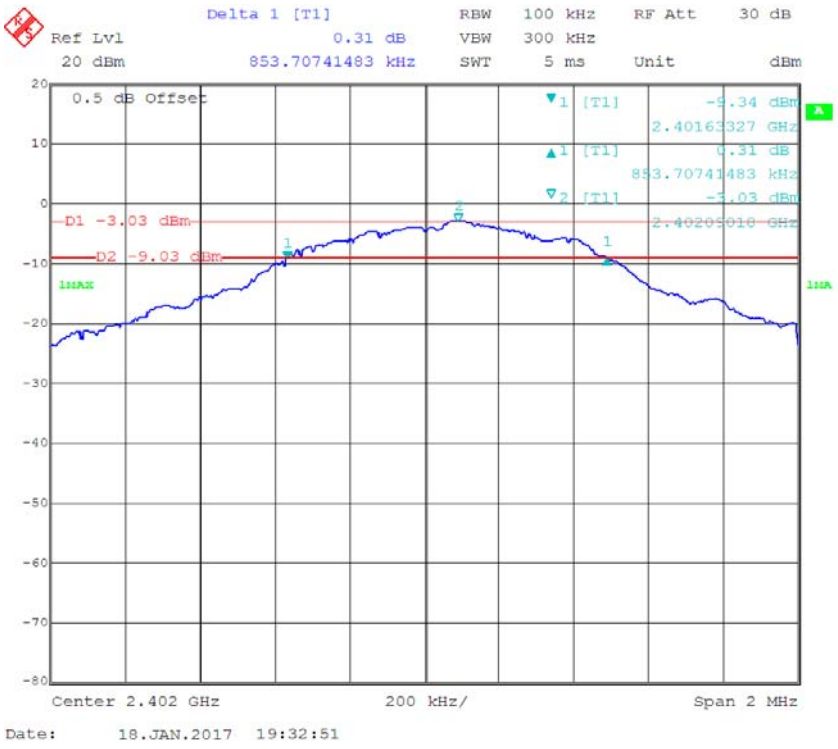
** The testing was performed by Lorin Bian on 2017-01-18.*

Test Mode: Transmitting

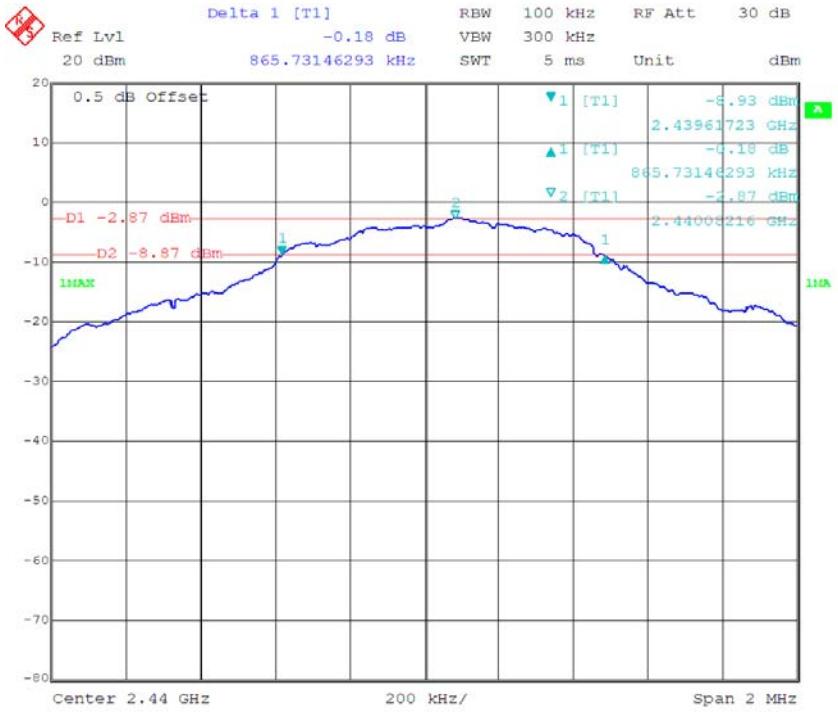
Test Result: Compliant. Please refer to the following table and plots.

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)
Low	2402	0.85	≥0.5
Middle	2440	0.87	≥0.5
High	2480	0.92	≥0.5

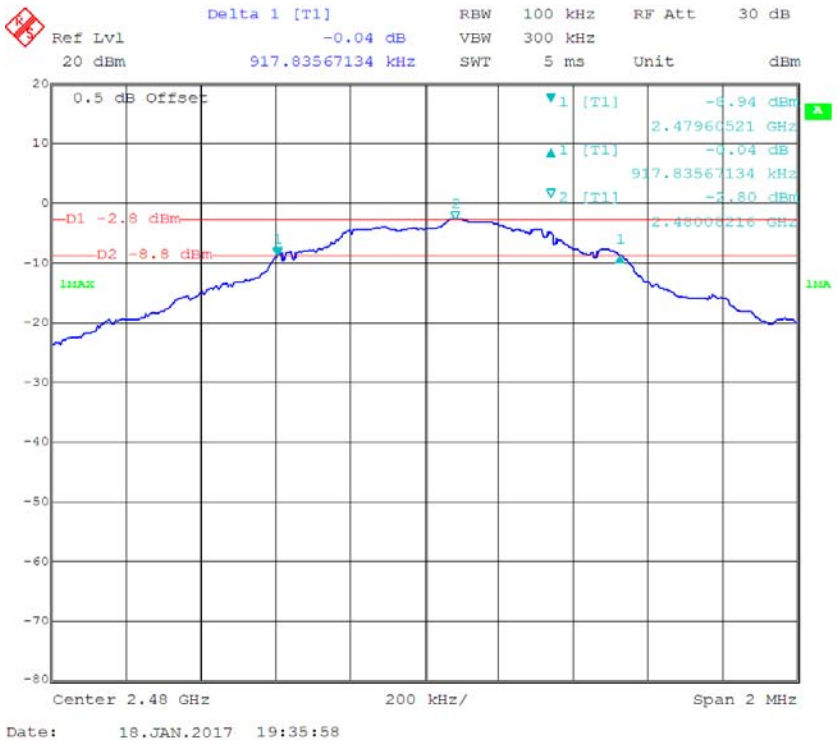
Low Channel



Middle Channel



High Channel



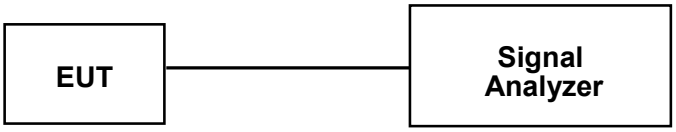
FCC §15.247(b) (3) - MAXIMUM CONDUCTED OUTPUT POWER

Applicable Standard

According to FCC §15.247(b) (3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

Test Procedure

a) Set the RBW ≥ *DTS bandwidth*.
b) Set VBW ≥ 3 RBW.
c) Set span ≥ 3 x RBW
d) Sweep time = auto couple.
e) Detector = peak.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use peak marker function to determine the peak amplitude level.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2016-09-21	2017-09-20
N/A	RF Cable	N/A	N/A	Each Time	/

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	25.4 °C
Relative Humidity:	43 %
ATM Pressure:	96.8 kPa

** The testing was performed by Lorin Bian on 2017-01-18.*

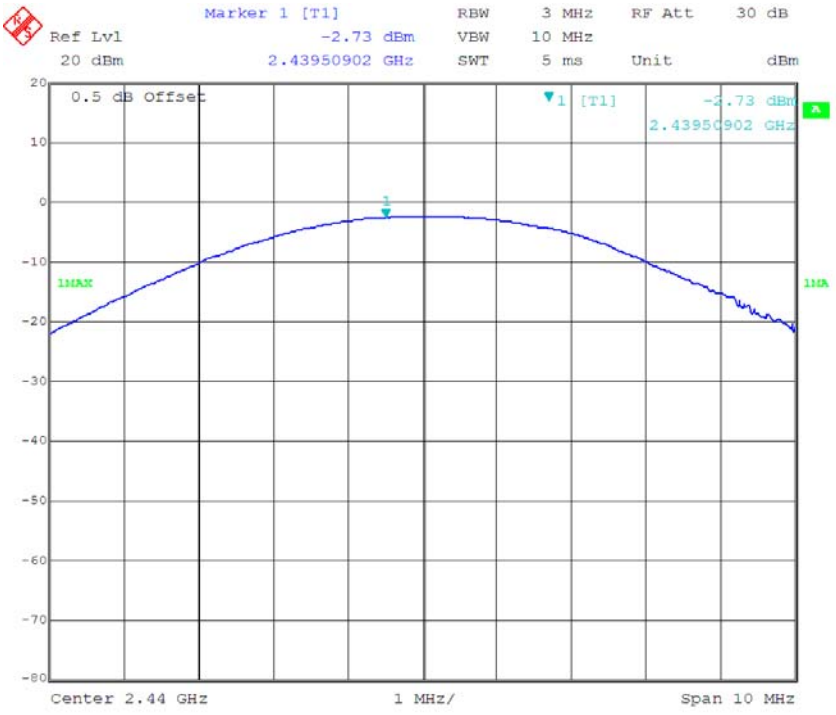
Test Mode: Transmitting

Test Result: Compliant. Please refer to the following table.

Channel	Frequency (MHz)	Max Peak Conducted Output Power (dBm)	Limit (dBm)
Low	2402	-2.86	30
Middle	2440	-2.73	30
High	2480	-2.61	30

Low Channel

Middle Channel



High Channel

FCC §15.247(d) – 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE

Applicable Standard

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2016-09-21	2017-09-20
N/A	RF Cable	N/A	N/A	Each Time	/

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

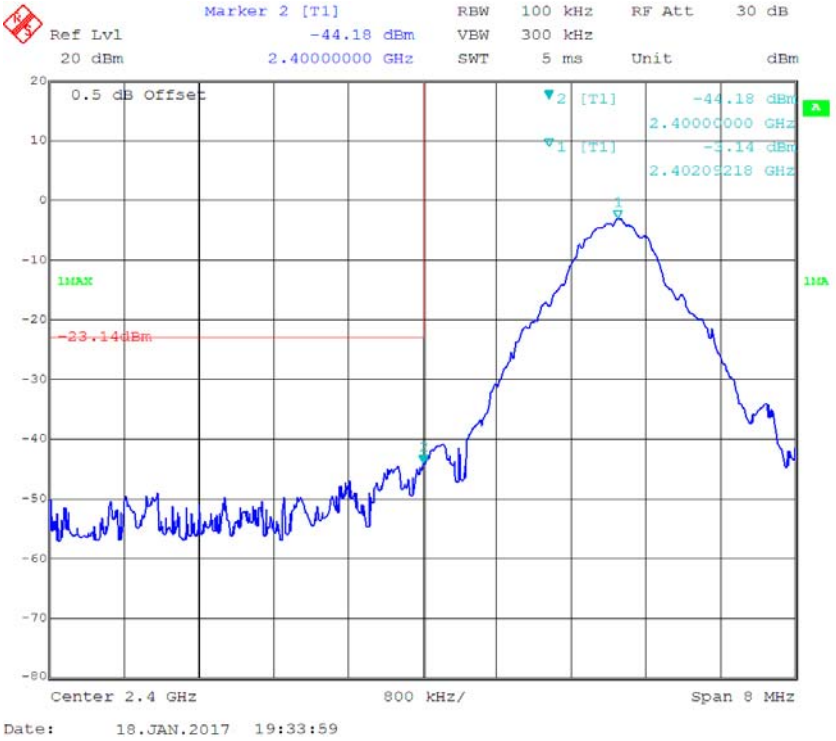
Temperature:	25.4 °C
Relative Humidity:	43 %
ATM Pressure:	96.8 kPa

** The testing was performed by Lorin Bian on 2017-01-18.*

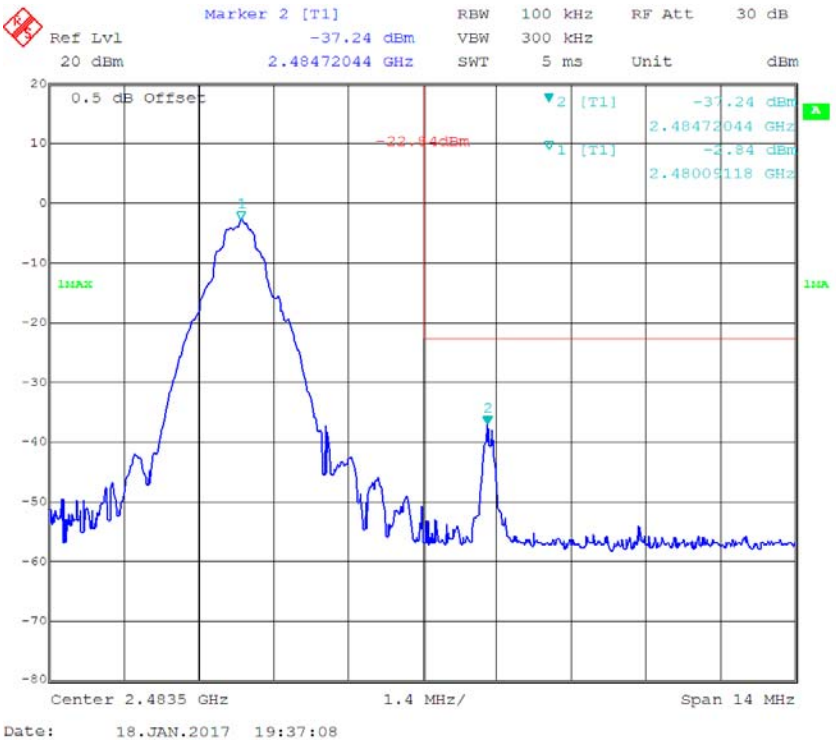
Test mode: Transmitting

Test Result: Compliant. Please refer to following plots.

BLE Band Edge，Left Side



BLE Band Edge, Right Side



FCC §15.247(e) - POWER SPECTRAL DENSITY

Applicable Standard

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. set the RBW = 3 kHz, VBW = 10 kHz, Set the span to 1.5 times the DTS channel bandwidth.
4. Use the peak marker function to determine the maximum power level in any 3 kHz band segment within the fundamental EBW.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2016-09-21	2017-09-20
N/A	RF Cable	N/A	N/A	Each Time	/

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	25.4 °C
Relative Humidity:	43 %
ATM Pressure:	96.8 kPa

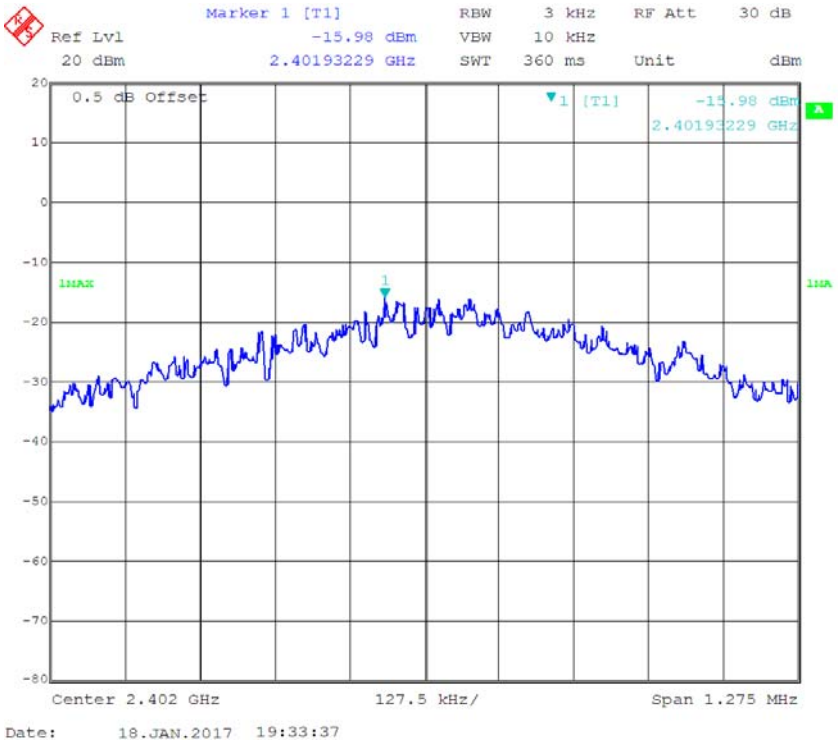
** The testing was performed by Lorin Bian on 2017-01-18.*

Test Mode: Transmitting

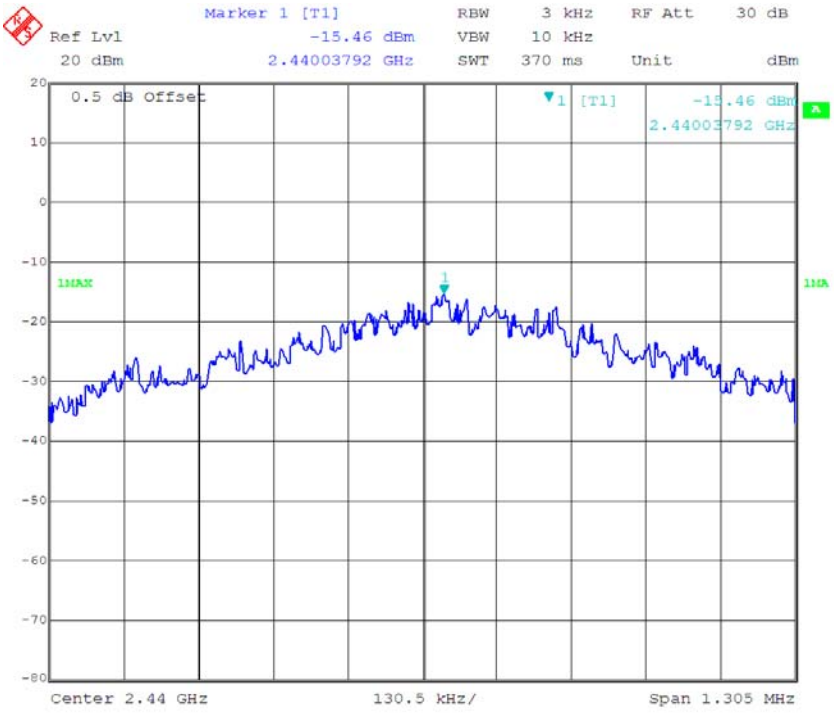
Test Result: Compliant. Please refer to the following table and plots

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)
Low	2402	-15.98	≤8
Middle	2440	-15.46	≤8
High	2480	-14.39	≤8

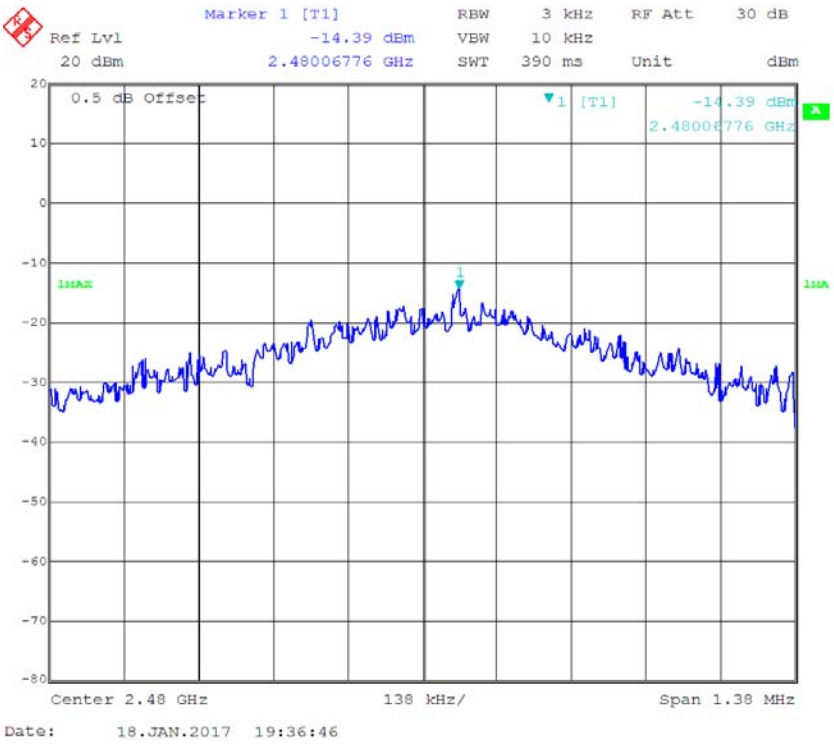
Low Channel



Middle Channel



High Channel



***** *END OF REPORT* *****